

THE STAR FORMATION HISTORY OF ORION AND ITS ENVIRONS

NAG5-10545

Annual Report

For the Period 15 March 2002 through 14 March 2003

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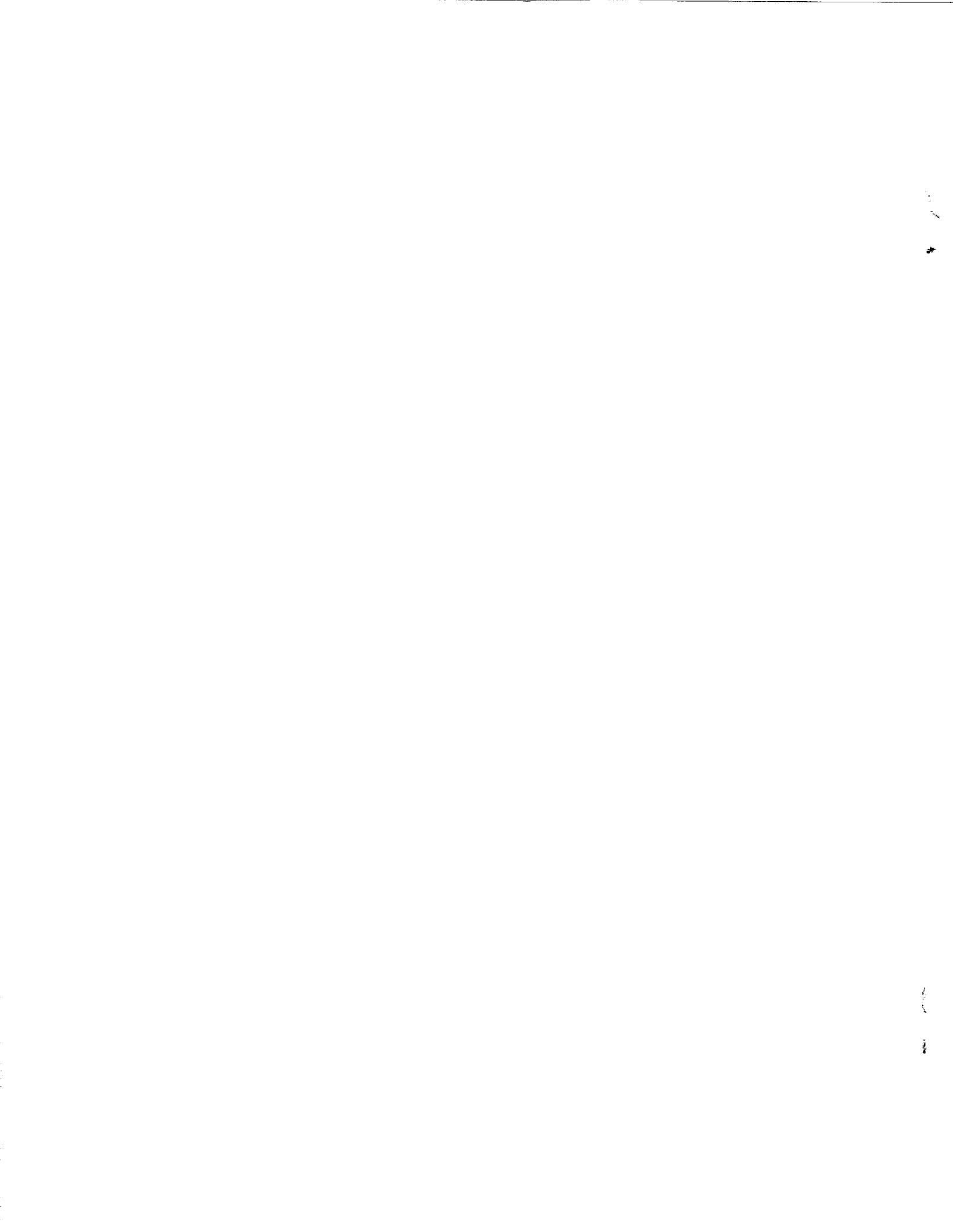
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The Star Formation History of Orion and Its Environs

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During the period of performance, we have obtained the following observations and carried out the analysis of the Orion associations itemized below.

Optical Photometry: The Quest camera that had been damaged by lightening on Sept 2001 was reconfigured to use 10 chips and only 3 filters instead of the original 4 but retaining its spatial coverage of 2.3° wide in declination. During the Winter and Fall 2002 observing campaigns, we obtained multifilter photometry using the Quest camera on the 1mt Schmidt of the Venezuelan National Observatory, to continue the survey of the Orion clouds. In the Winter 2002 season, we obtained photometry for 10 scans at DEC=+5, 7 scans at DEC=-5. Several additional scans at DEC=-3 were obtained during the Fall 2002 observing campaign.

Slit spectroscopy of bright candidates: During 2002 spectra for some 235 candidate PMS stars were obtained with the FAST spectrograph at the SAO 1.5m telescope in Mt. Hopkins. These objects, all brighter than $V=16$, are located in two strips centered at DEC=+1 and -5, and spanning from RA=5h-6h. The spectra are being analyzed.

Multifiber spectroscopy: Spectroscopy for our fainter ($V \leq 16$) candidates has not kept pace with our spectroscopy of brighter candidates, because of the delay in the commissioning of the Hectospec and Hectoechelle multi-object spectrographs at the new 6.5m MMT. We obtained some data with the Hydra spectrograph on the WIYN telescope:

Feb 1-4, 2002. Time granted to the project: "A Large Scale Survey of the Low-Mass Young Population in the Orion OB1 Association" (P.I.: C. Briceno). Three half-nights (we used the first half of the night, the second half of the night was used with the Mini-Mosaic imager by another team). Only the first half night was clear. We observed 3 fields centered in a 2.3 deg wide strip centered at DEC=-1 and spanning RA=5h to 6h. A total of 250 spectra were obtained for the same number of candidate PMS stars.

Nov. 13-15, 2002. Time granted to the project "Cluster survey of protoplanetary disk evolution", (P.I.: A. Sicilia-Aguilar). Clear weather throughout. We obtained spectra for some 200 candidate PMS stars in 3 fields located in a 2.3 deg wide strip centered at DEC=+1 and spanning from RA=5h20m to 5h35m.

Data for both observing runs is partially reduced and is being analyzed.

U photometry: During Nov.29-Dec.4, 2002 we were granted time with the 4-shooter CCD Mosaic Camera at the SAO 1.2m telescope, to obtain U-band photometry of a subset of the newly identified T Tauri stars in the strip centered at DEC=-1. This sample is composed of strong H α emitting PMS stars (Classical T Tauri stars) located mostly in the Orion OB 1b association, around the Orion Belt area. Our data will be combined with our calibration of the U-band excess (Gullbring et al. 1998) to derive mass accretion rates. Because of bad weather we observed only 20 stars during 1.5 clear nights.

Near IR photometry: During Dec. 14-19, 2002 we used the IR Camera on the SAO 1.2m telescope, to obtain L-band photometry of a set of 17 the newly identified Orion OB 1a and 1b stars, in order to look for IR excess emission coming from the hotter inner parts of circumstellar disks. Again, mediocre weather prevented a larger set to be observed. These stars were also observed with the OSCIR mid-IR camera on Gemini North during later 2001. Our goal is to construct SEDs from the visual out to the mid-IR (by combining our optical/IR data with 2MASS JHK magnitudes) in order to explore disk dissipation at the critical ages of 5-10 Myr spanned by these stars.